Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

SPECint®2006 = 74.9
SPECint_base2006 = 72.6

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Hardware
CPU Name: Intel Xeon E5-2699A v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 44 cores, 2 chips, 22 cores/chip
CPU(s) orderable: 1.2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 55 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 1.2 TB SAS HDD 10K RPM
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default
Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux
Auto Parallel: Yes
File System: xfs
System State: Run level 5 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2

Test date: Feb-2017
Hardware Availability: Apr-2016
Software Availability: Dec-2015
Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>242</td>
<td>40.3</td>
<td>240</td>
<td>40.7</td>
<td>240</td>
<td>40.7</td>
<td>208</td>
<td>46.9</td>
<td>208</td>
<td>46.9</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>379</td>
<td>25.5</td>
<td>379</td>
<td>25.5</td>
<td>376</td>
<td>25.6</td>
<td>376</td>
<td>25.7</td>
<td>375</td>
<td>25.7</td>
</tr>
<tr>
<td>403.mcf</td>
<td>210</td>
<td>38.3</td>
<td>210</td>
<td>38.3</td>
<td>210</td>
<td>38.4</td>
<td>202</td>
<td>39.8</td>
<td>203</td>
<td>39.7</td>
</tr>
<tr>
<td>429.gcc</td>
<td>141</td>
<td>64.6</td>
<td>136</td>
<td>67.1</td>
<td>137</td>
<td>66.6</td>
<td>139</td>
<td>65.6</td>
<td>139</td>
<td>65.6</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>338</td>
<td>31.1</td>
<td>338</td>
<td>31.1</td>
<td>338</td>
<td>31.1</td>
<td>333</td>
<td>31.5</td>
<td>333</td>
<td>31.5</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>106</td>
<td>87.8</td>
<td>106</td>
<td>88.2</td>
<td>106</td>
<td>88.2</td>
<td>106</td>
<td>88.2</td>
<td>106</td>
<td>88.2</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>343</td>
<td>35.3</td>
<td>342</td>
<td>35.3</td>
<td>343</td>
<td>35.3</td>
<td>334</td>
<td>36.2</td>
<td>333</td>
<td>36.3</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>2.09</td>
<td>9900</td>
<td>2.11</td>
<td>9810</td>
<td>2.09</td>
<td>9900</td>
<td>2.11</td>
<td>9810</td>
<td>2.09</td>
<td>9900</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>378</td>
<td>58.5</td>
<td>377</td>
<td>58.7</td>
<td>379</td>
<td>58.4</td>
<td>378</td>
<td>58.5</td>
<td>377</td>
<td>58.7</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>122</td>
<td>51.1</td>
<td>124</td>
<td>50.3</td>
<td>123</td>
<td>51.0</td>
<td>113</td>
<td>55.3</td>
<td>112</td>
<td>55.3</td>
</tr>
<tr>
<td>473.astar</td>
<td>198</td>
<td>35.5</td>
<td>198</td>
<td>35.4</td>
<td>198</td>
<td>35.5</td>
<td>198</td>
<td>35.5</td>
<td>198</td>
<td>35.5</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>87.2</td>
<td>79.1</td>
<td>86.8</td>
<td>79.5</td>
<td>87.0</td>
<td>79.3</td>
<td>80.7</td>
<td>85.6</td>
<td>80.5</td>
<td>85.7</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes
The config file option 'submit' was used.

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes
BIOS Settings:
Intel Hyper-Threading Technology option set to Disabled
CPU performance set to Enterprise
Power Technology set to Energy Efficient
Energy Performance BIAS setting set to Balanced Performance
Memory RAS configuration set to Maximum Performance
Memory Power Saving Mode set to Disabled
QPI Snoop Mode set to Home Directory Snoop with OSB
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-cd5x Mon Feb 6 13:35:06 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2699A v4 @ 2.40GHz
   2 "physical id"s (chips)
Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

SPECint2006 = 74.9
SPECint_base2006 = 72.6

CPU2006 license: 9019
Test date: Feb-2017
Test sponsor: Cisco Systems
Hardware Availability: Apr-2016
Tested by: Cisco Systems
Software Availability: Dec-2015

Platform Notes (Continued)

44 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 22
siblings : 22
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27

44 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 22
siblings : 22
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27

cache size : 56320 KB

From /proc/meminfo
MemTotal: 264565692 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID="sles"
ID_VENDOR_ID="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
Linux linux-cd5x 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 5 Feb 6 08:50
SPEC is set to: /opt/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 xfs 1.1T 26G 1.1T 3% /

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is 'intended to allow hardware to be accurately determined', but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Continued on next page
Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

SPECint2006 = 74.9
SPECint_base2006 = 72.6

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Platform Notes (Continued)

BIOS Cisco Systems, Inc. C240M4.2.0.13d.0.0812161132 08/12/2016
Memory:
16x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "44"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
SPEC CINT2006 Result

Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

SPECint2006 = 74.9
SPECint_base2006 = 72.6

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems
Test date: Feb-2017
Hardware Availability: Apr-2016
Software Availability: Dec-2015

Base Optimization Flags
C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
-auto-p32

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags
C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation
C benchmarks (except as noted below):
icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
473.astar: icpc -m64

Peak Portability Flags
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

SPECint2006 = 74.9
SPECint_base2006 = 72.6

CPU2006 license: 9019
Test date: Feb-2017
Test sponsor: Cisco Systems
Hardware Availability: Apr-2016
Tested by: Cisco Systems
Software Availability: Dec-2015

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -auto-ilp32 -qopt-prefetch

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
-qopt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-qopt-prefetch -auto-p32

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2)

456.hmmer: basepeak = yes

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-ra-region-strategy=block
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:

Continued on next page
Cisco Systems
Cisco UCS C240 M4 (Intel Xeon E5-2699A v4, 2.40 GHz)

| SPECint2006 = | 74.9 |
| SPECint_base2006 = | 72.6 |

| CPU2006 license: | 9019 |
| Test sponsor: | Cisco Systems |
| Tested by: | Cisco Systems |
| Test date: | Feb-2017 |
| Hardware Availability: | Apr-2016 |
| Software Availability: | Dec-2015 |

**Peak Other Flags (Continued)**

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.